CHANGE ISSUE – RTCA/DO-242

MASPS for ADS-B Rev. A

Tracking Information (committee secretary only)	
Change Issue Number	1
Submission Date	12/27/00
Status (open/closed/deferred)	Rev. A - CLOSED
Last Action Date	2/22/02

Short Title for Change Issue:	Turn indication is problematic and should be deleted as a required ADS-B message element.

MASPS Document Reference:		Originator Information:	
Entire document (y/n)		Name	Stephen Heppe / ADSI Inc
Section number(s)		Phone	+1 703-589-1522
Paragraph number(s)	2.1.2.2.3	E-mail	steveheppe@adsi-m4.com
Table/Figure number(s)	Table 2-2	Other	

Proposed Rationale for Consideration (originator should check all that apply):	
X	Item needed to support of near-term MASPS/MOPS development
X	DO-260/ED-102 1090 MHz Link MOPS Rev A
X	ASA MASPS
	TIS-B MASPS
X	UAT MOPS
	Item needed to support applications that have well defined concept of operation
	Has complete application description
	Has initial validation via operational test/evaluation
	Has supporting analysis, if candidate stressing application
	Item needed for harmonization with international requirements
	Item identified during recent ADS-B development activities and operational evaluations
	MASPS clarifications and correction item
X	Validation/modification of questioned MASPS requirement item
	Military use provision item
	New requirement item (must be associated with traffic surveillance to support ASAS)

Nature of Issue:		Editorial		Clarity		Performance	X	Functional

Issue Description:

Turn indication is described as turning left, turning right or not turning. Table 2-2 indicates that it is a required message element for roughly half of the indicated applications. However, GPS cannot determine when an aircraft is turning (it cannot differentiate between a turn and a lateral wind gust). Even an FMS may be unable to differentiate between a turn and a lateral wind gust, sideslip, etc. unless the aircraft is operating under full autopilot. If the aircraft is being flown manually, the pilot will be making continual control inputs which could be easily mistaken for the start of a turn (leading to potential false alarms by receiving aircraft). If the aircraft is on full autopilot, TCPs are much more effective and operationally useful.

Originator's proposed resolution if any:

Delete turn indication as a required message element for any application. Originator's preference is to delete turn indication completely from the MASPS. However, it could be retained as an optional element pending future definition (i.e., when a well-defined concept of operation is developed).

Working Group 6 Deliberations:

May 24, 2001: This Issue Paper was discussed by the ad hoc group at their May 2001 meeting. It was agreed that this Issue Paper will be addressed in DO-242A. The proposed resolution will probably be adopted within DO-242A, unless Jonathan Hammer (Mitre/CAASD) can provide analysis or other rational to keep Turn Indication as a required message element. (See action Item 5-10.)

July 13, 2001: This paper was again discussed at the WG6 July meeting. Jonathan Hammer agreed to adopt the proposed resolution to delete Turn Indicators as a required message element. Therefore, the proposed resolution shall be incorporated into DO-242A.

August 30, 2001: At the August WG6 meeting, Stuart Searight was given Action Item 7-14 to determine all MASPS changes necessary to no longer have Turn Indication as a required ADS-B message element.

February 22, 2002: Based on Stuart's response for AI 7-14, and completing review of all DO-242 sections for a consistency check with changes made for DO-242A, WG6 determined that all instances of Turn Indicator had been removed from DO-242A, and that those actions will close this Issue Paper in DO-242A.

Working Group 6 Final Resolution:

All instances of Turn Indicator will be removed from the MASPS. This includes the following:

- Section 2.1.2.2 "State Vector" has been removed from DO-242A as part of the report re-organization documented in IP 33.

- Section 2.1.2.2.3 "Airborne Turn Indication" will be removed. This is the section that contained the requirement that read, "An Airborne turn indication shall (R2.1) be designated as turning right, turning left, or not turning."

- The "Turn Indication" row will be removed from Table 2-2 "Summary for Application Needs for Applications Supported by ADS-B". This Table showed Turn Indication as required for Separation Assurance & Sequencing, Flight Path Deconfliction Planning, Simultaneous Approaches, and ATS Surveillance.

- The "Turn Indication" row will be removed from Table 2-4a "Additional and Refined Capabilities Appropriate for ADS-B Supported Sample Scenarios".

- "Turn Indication" will be removed from the first bullet in section 3.2.1.1 "System Level".

- Turn Indication will be removed from Table 3-5 "State Vector Report Definition". (*Note: Table 3-5 is being completed redone as part of the report re-organization documented in IP 33.*)

- In Section 4.0, "Airborne Turn Indication" will be removed from R2.12 as a required State vector Element. (*Note: R2.12 – which is found in 2.1.2.2 - will be deleted in its entirety since 2.1.2.2 is to be deleted as part of the report re-organization documented in IP 33. See first bullet above.*)

- In Section 4.0, R2.26 which reads "An Airborne turn indication shall be designated as turning right, turning left, or not turning", will be deleted. (*See 2nd bullet above.*)